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(54) Method of assembling a structural member.

(57) A structural member is assembled from a plurality of elongate elements (10, 13) each of which has one or more slots (11, 12) on at least one of its faces. The slotted faces are held in close proximity so that the slots (11, 12) therein are aligned and the aligned slots are filled with a hardenable material.

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## METHOD OF ASSEMBLING A STRUCTURAL MEMBER

This invention relates to assemblies of elongate structural elements which are secured together in parallel to provide a structural member having a desired cross-section.

It is known to assemble structures from a plurality of elongate members each of which has slot of generally T-section along one of its faces, two such members being clamped together by means which engages the T-slot in one of them. Where a structure assembled in this way is required to support a considerable load, the effective cross-section of the members must frequently be altered or increased, or both. However, since such members are generally fabricated by extrusion, the provision of non-standard cross-sections gives rise to the problems and cost of special tooling.

It is an object of the present invention to provide a method by which structural members having a wide variety of cross-sectional areas and shapes may readily be assembled by selection from a relatively small range of standard elements.

According to the invention there is provided a method of assembling a structural member, comprising securing together a plurality of elongate elements each of which has extending along at least one face thereof a slot whose width at said face is less than that at the bottom of the slot, locating said elements so that said one face of each one of the elements is closely adjacent a corresponding face of another of the elements and the slots in said faces are substantially aligned, and filling the aligned slots with a hardenable material.

The invention also relates to a structural member when assembled as above defined.

In a particular embodiment said slots are T-slots.

In a preferred embodiment the areas of said one face on either side of the slot therein are mutually planar.

In a further preferred embodiment said hardenable material is a synthetic resin.

Embodiments of the invention will now be described by way of example only and with reference to Figures 1 to 4 of the drawings which show cross-sections of members which are assembled from a plurality of elements.

Figure 1 shows four metal elements 10 of identical substantially rectangular, hollow cross-section, assembled to provide a member which also has a substantially rectangular cross-section. The elements 10 have two T-slots 11 in each longer side, and a single T-slot 12 in each shorter side. The face portions of each side of the T-slots are mutually planar, so that the elements 10 may be positioned with their adjacent sides in abutment, and with the T-slots therein in alignment, as shown in the figure. With the elements

10 so held the aligned T-slots are filled with a suitable hardenable material 15, as for example a synthetic resin, which when hardened will maintain the elements 10 in their required relative positions.

Figure 2 shows members 10 identical with those of Figure 1, assembled into a member having a T-shaped cross-section.

Figure 3 shows two members 10 combined with two elements 13 whose longer dimension is greater than that of the elements 10, to provide a member having a box shaped cross-section.

Figure 4 shows two elements 10 and two elements 13 assembled with an angle-section element 14, the latter having a T-slot in one of its sides.

It will be understood that elongate elements of any suitable cross-section may be used to provide a required structural member, provided that each element has one or more faces which can be located closely adjacent a corresponding face, or faces, of other elements, and that those faces include slots which can be brought into mutual alignment, the slots being shaped to provide a keying action with the hardenable material introduced therein. The slots may be other than T-slots, as for example of dovetail cross-section. The slotted face of an element may be other than flat, provided that the element with which it is to be assembled has a slotted face of a complementary shape.

It will also be understood that the hardenable material may be other than a synthetic resin and may, for example, be a suitable thermoplastic.

## 35 Claims

1. A method of assembling a structural member, comprising securing together a plurality of elongate elements each of which has extending along at least one face thereof a slot whose width at said face is less than that at the bottom of the slot, locating said elements so that said one face of one of the elements is closely adjacent a corresponding face of another of the elements and the slots in said faces are substantially aligned, and filling the aligned slots with a hardenable material.
2. A method as claimed in Claim 1 in which the areas of said one face on either side of the slot therein are mutually planar.
3. A method as claimed in Claim 1 or Claim 2 in which said slots are T-slots.
4. A method as claimed in any preceding claim in which one of said elements is of rectangular hol-

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low cross-section.

5. A method as claimed in any preceding claim in  
which said hardenable material is a synthetic  
resin.

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6. A method as claimed in any of Claims 1 to 4 in  
which said hardenable material is a thermoplas-  
tic.

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7. A method as claimed in any preceding claim in  
which said elements are metallic.

8. A structural member when produced by the  
method of any of the preceding claims.

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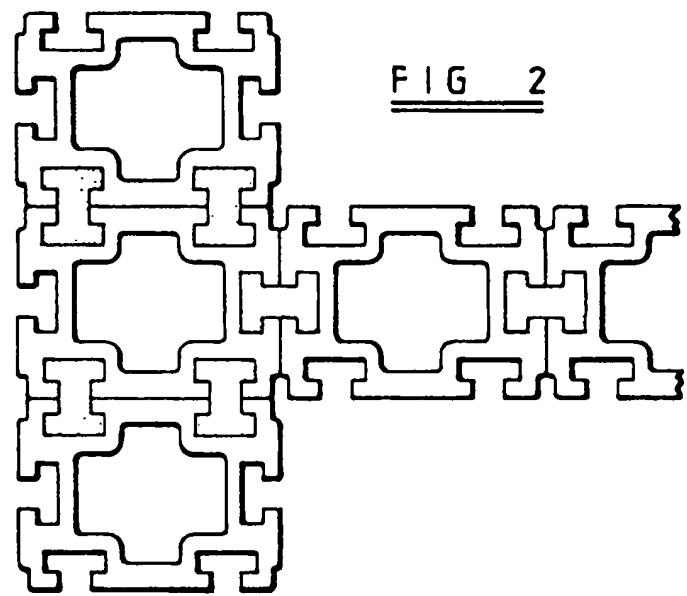
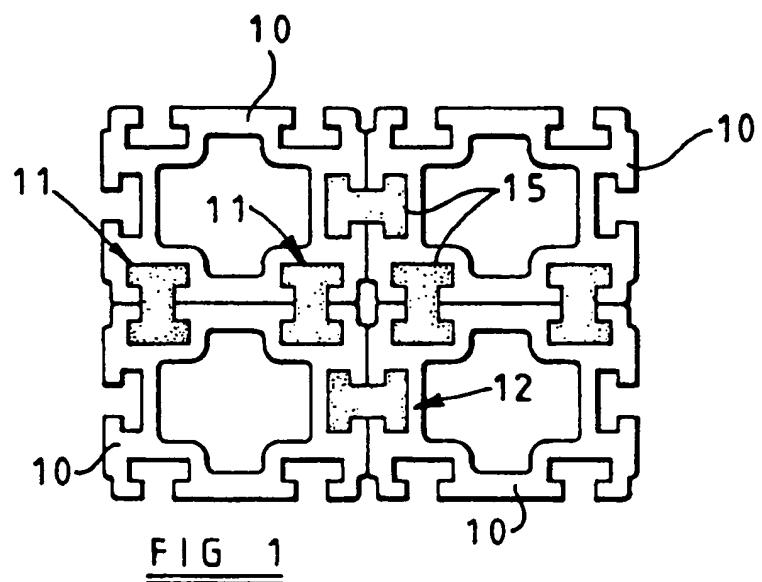
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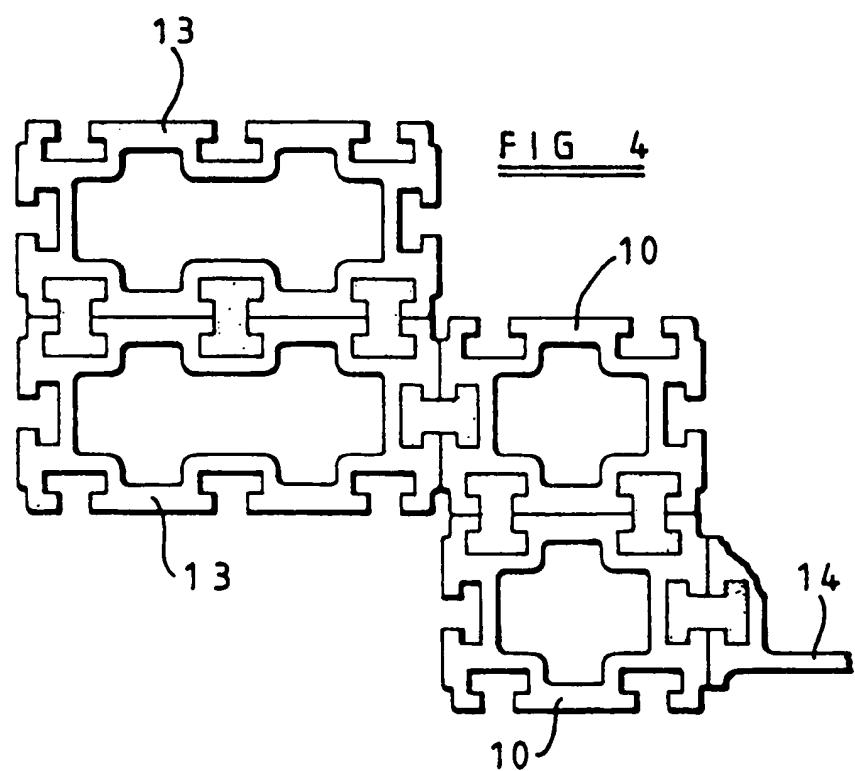
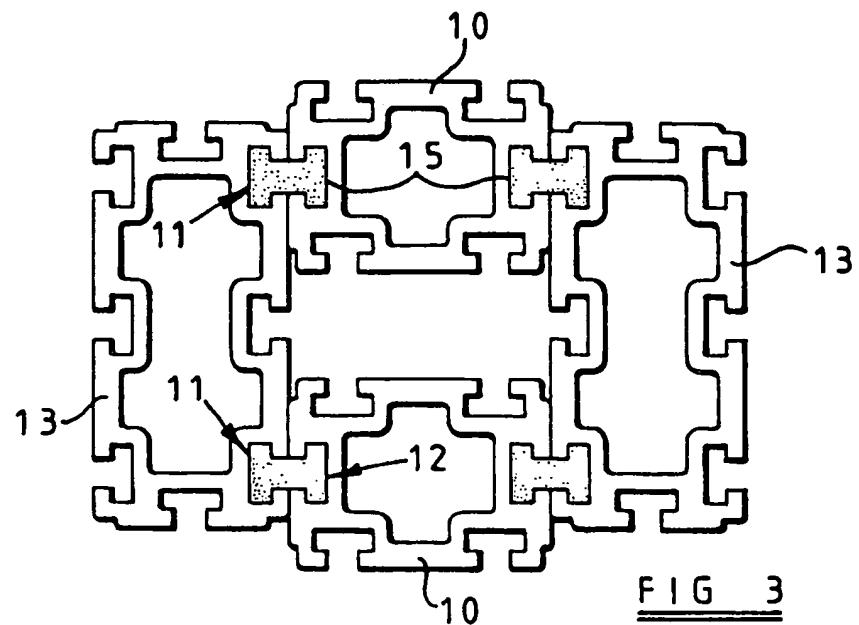
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## EUROPEAN SEARCH REPORT

Application Number

EP 90 31 3109

DOCUMENTS CONSIDERED TO BE RELEVANT									
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)						
A	FR-A- 326 345 (KORFF) * En entier * ---	1, 2, 3, 8	E 04 C 3/06 E 04 C 3/32						
A	EP-A-0 230 535 (ALUMINIA) ---								
A	GB-A-2 179 075 (PERMABOND) ---								
A	FR-A-1 377 860 (FELIX) ---								
A	US-A-3 055 399 (BUSH) -----								
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)						
			E 04 C E 04 B						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>12-03-1991</td> <td>VANDEVONDELE J.P.H.</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	12-03-1991	VANDEVONDELE J.P.H.
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